

CLIMATE CHANGE, SCIENCE AND BUSINESS SOCIAL RESPONSIBILITY

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ABSTRACT

Climate change caused by global warming, which has significant anthropogenic features due primarily to the reliance on coal, oil and other fossil fuels since the Industrial Revolution of the 18th century, is real. It has already significantly impacted the coasts and climate of the United States, and evidence of its impact elsewhere on the planet proliferate. The reluctance to recognize the consensus of the scientific community on this point by the public, business, and national government in the United States, is compounded of several factors: uncertainty in the public about the relative risks of climate change as opposed to other concerns (such as terrorism); expenditure of funds by corporate interests to increase this uncertainty through advertising and lobbying, due to their reluctance to assume the costs of reducing the externalities their activities impose on society; and institutional resistance in the political sphere to expending political and fiscal capital on mitigating perceived long-term risks, however serious, at the price of short term tax increases that might cost them votes and campaign contributions. Increasingly, however, the risks of unmitigated climate change are being recognized as imposing significant short term costs, particularly in terms of reconstruction from damage caused by severe weather and rising waters, and the associated impact on the insurance industry world-wide. Several authorities believe we may already have passed the point of no return beyond which major changes in our way of life are unavoidable, but the degree to which this will be the case depends upon the seriousness with which we take the challenge. From the standpoint of corporate America, and the interests of the global business community, business has an ethical obligation to respond appropriately, by ceasing to fund climate change deniers, and putting significant corporate investments into reducing greenhouse gas emissions, developing and exploiting alternate energy sources, and investing in and promoting green manufacturing, products and services. Given the costs to business of inaction in this sphere, which will impact shareholders and stakeholders alike, and the social contract business has with society that permits it to act in the corporate form in order to serve the interests of the community which issues its charter, business must take a leadership role in mitigating climate change now.

INTRODUCTION

Climate change caused by global warming, which has significant anthropogenic features due primarily to the reliance on coal, oil and other fossil fuels since the Industrial Revolution of the 18th century, is real. (Ponting, 1993; McNeill, 2001; Houghton, 2004; Gelbspan, 2004; Flannery, 2005; Kolbert, 2006) Despite repeated attempts by a few scientists reliant on oil and coal corporate funding to discredit their findings (Lindzen, 1992; Gelbspan, 1995; Gelbspan, 1998; Gelbspan, 2001; Lindzen, 2006a & b; Singer, 2006; Oreskes, 2006), the vast majority of peer-reviewed scientific literature supports the real consensus that climate change is here, and that without significant steps now to address it, the consequences for life on earth—including human life—will be dire. (Gore, 2006a; Lovelock, 2006; Stix, 2006) As Jim Hansen, Director of the NASA Goddard Institute for Space Studies, notes: “Flannery concludes, as I have, that we have only a short time to address global warming before it runs out of control.” (Hansen, 2006) The United Kingdom has gone so far as to appoint an

envoy for climate change, John Ashton, who has asserted: “We need to treat climate change not as a long term threat to our environment but as an immediate threat to our security and prosperity.” (Ashton, 2006)

The Hockey Stick Debate and the Politics of Science

In June 2005, Congressman Joe Barton (R-Texas), chair of the House Committee on Energy and Commerce, demanded “detailed documentation” from three scientists of their hundreds of studies of greenhouse gases and climate change, citing in his letter a connection between the work of Michael E. Mann, Raymond S. Bradley, and Malcolm K. Hughes and his concern “about the federally funded work upon which climate studies rely and the quality and transparency of analyses used to support the IPCC assessment process.” Thomas Crowley at Duke University called the demand “a technical form of harassment by people in Congress who are opposed to global warming and basically want to discredit the science so that they don’t have to worry about the policy alternatives.” (Monastersky 2005) Everyone

is opposed to global warming — the question is, if it is real, what should we do about it.

After much debate, the Congress requested in 2005 that the National Academies conduct a study of the methodology and conclusions of Michael E. Mann and his colleagues concerning the apparently “unprecedented” warming of the northern hemisphere in the late 20th century. Mann had concluded in the late 1990s that this warming was “unprecedented in the past thousand years,” and produced among other things what became known as the “hockey stick” diagram which we have seen used in many reports and debates, from the U.N.’s Intergovernmental Panel on Climate Change report in 2001, (Monastersky, 2006b) to the *Wall Street Journal*’s editorial pages (to debunk it) (Hockey Stick Hokum, 2006; Sachs, 2006b) and Al Gore’s film “An Inconvenient Truth” and the book of the same title. (Gore, 2006a) On June 22, 2006, the National Academies released a 155 page study which while faulting some of the statistical methods used in the original study, concluded that general thrust of the Mann report was correct. The 12-member panel concluded that there was “high confidence” that the planet is now at its warmest in 400 years. (Committee on Surface Temperature, 2006; Kearney, 2006; Revkin, 2006a) Despite this essential reaffirmation of Mann’s research, House Republicans Joe Barton of Texas and Edward Whitfield of Kentucky held hearings in July 2006 that sought to discredit his findings by presenting the findings of their own “more-secret assessment by three academic statisticians” including Edward J. Wegman of George Mason University. Rep. Henry A. Waxman (D-California) accused the majority on the subcommittee of merely attempting to “sow doubt” rather than get at “the truth,” and Mann, in Vermont at the time of the hearings, was quoted as saying that the Wegman report “is simply a regurgitation of various specious claims and criticisms that have been put forward.” (Monastersky, 2006a)

This injection of politics into not just the *policy* debate over global warming, but also into seeking to question the underlying peer-reviewed *science*, is not new, not exclusive to the science of global warming (think of the challenges to the teaching of the theory of evolution, and the stem cell research debate) (Mirsky, 2006; Smith, 2005), and it reflects a long-standing alliance between the fossil fuel industry (coal and oil) and primarily, but not exclusively, Republican political leaders who seek to discredit valid science because of the financial implications of being forced to act on it for both government and their corporate contributors. For example, Chris Mooney reported that:

By 2002, ExxonMobil was donating over a million dollars annually to policy groups and think tanks involved in battling against the scientific mainstream on global warming, including the George C. Marshall Institute, the Competitive Enterprise Institute, Frontiers of Freedom, the Heartland Institute, the website TechCentralStation.com, and many others. . . . [C]onsider the late 2004 release of the Arctic Climate Impact Assessment, which showed that human-fueled global warming has already had alarming impacts on the Arctic region, such as the melting of glaciers and sea ice. The Marshall Institute promptly challenged the report’s science; and then [Senator] Inhofe, in issuing his own challenge, cited the Marshall Institute. (Mooney, 2005)

More recently, NASA has revised its mission statement to exclude concern about scientific research about the Earth and its climate from its research mandate, in part because of the current Bush Administration’s emphasis on long-term Mars exploration, but perhaps also because previous NASA research on Earth’s climate tended to support the case for anthropogenic global warming. (Revkin, 2006b) Similarly, the journal *Nature* is reported to have learned that the U.S. Commerce Department recently blocked the release of a document describing possible links between global warming and hurricanes, just before the anniversary of Katrina and the commencement of the new hurricane season. (Revkin, 2006d)

In Texas, Republican Governor Rick Perry continues the old political connection with the fossil fuel industry, issuing an executive order that “would fast-track the permit approval process for 11 or more new coal plants, without requiring them to adopt the newer clean coal technology now readily available. (Burnam, 2006; Buskey, 2006; TXU Plan Threatens Progress on Climate, 2006; Komp, 2006)

We have yet to see the day when there are explicitly “Republican” and “Democratic” editions of peer-reviewed scientific journals, but since for all practical purposes that day has long since arrived in the “research” of industry-funded think tanks and newly founded institutes of “public policy” that seek to define the national interest (Rich, 2005; Brock,

2005; Domhoff, 2002; Weisberg, 1998; Rogers & Harwood, 1995) one should not be surprised if this too shall come one day for science. (Kaplan, 2004) The purging of mainstream and well-respected scientists from FDA, EPA and other government advisory boards is a sign of movement in that direction, and political attacks on the research independence of the universities may not be far behind: accountability is the new buzz-word, and the Supreme Court has already ruled many times that if there is any federal funding connected with an activity, whether it be family planning or "Postcards from Buster" on PBS, "he who pays the piper calls the tune" even if federal funds are only a small component of the organization's funding, and without any serious First Amendment limitations on Congress's power of the purse. *Rust v. Sullivan*, 500 U.S. 173 (1991)

Mounting Evidence for Climate Change and Its Implications

Before and since the release of the Gore film and Academies report, however, evidence of the real impact of global warming has continued to proliferate, demonstrating that man-made climate change has already significantly impacted the forests, coasts and climate of the United States, and elsewhere on the planet. Small island nations in the Pacific are already in danger of being inundated. (Whitty, 2003) There is evidence that the Atlantic heat-transport mechanism that includes the Gulf Stream is slowing down as a result of global warming, and this may lead to significant climate change in Europe. (Monastersky, 2005b) The Scripps Institution in California reported in July of 2006 "that warmer temperatures, causing earlier snow runoff and consequently drier summer conditions, were the key factor in an explosion of big wildfires in the U.S. West over three decades," with similar conclusions reached concerning fires in Canada and Siberia. (Warming, World's Wildfires Related, 2006) The glaciers are melting in Peru's Andean mountains, reducing water available for irrigation and, as temperatures rise higher up the mountains, introducing new pests into the ecosystem. (Friedman, 2006) The National Center for Atmospheric Research in Boulder, Colorado reported this past summer that "Global warming helped fuel 2005's destructive hurricane season," concluding that "About half of [2005's] extra (ocean) warmth was due to global warming." (Vergano, 2006)

Further support for a link between tropical ocean warming and greenhouse gases, possibly linked to increased storms, comes from a study by

Benjamin D. Santer of Lawrence Livermore National Laboratory in the Energy Department. Santer's study suggests further warming may make hurricanes stronger in coming decades, in a report available on line at the Proceedings of the National Academy of Sciences. (Revkin, 2006c)

A research team led by NASA's James Hansen reported in the Proceedings of the National Academy of Sciences recently that "Earth's temperature has climbed to levels not seen in thousands of years, and that has begun to affect plants and animals." (Extraordinary Rise, 2006; Naik, 2006)

Some of the evidence for global warming indicates that it has a few positive local benefits: reindeer herding and potato farming are expanding in Greenland as temperatures rise and the glaciers melt, while a decline in the cold-water loving shrimp industry is off-set by gains in cod fisheries, as the cod prefer the warmer weather. The melting of the glaciers that is described in Kolbert (2006) and elsewhere may have severe impacts on sea levels world-wide, but at least farmers in Greenland may be better off for a time. (Etter, 2006) In contrast, homeowners in America are facing higher insurance premiums, as insurance companies address the costs of increasingly frequent and severe hurricane damage. Risk Management Solutions, "a company that forecasts the risk of natural disasters for the insurance industry has revamped the computer model it uses to simulate future weather trends," and predicts "that average annual insurance losses will increase 25 to 30 per cent in the coastal Northeast because of increased hurricane activity." (Daley, 2006) Flannery notes:

Since the 1970s insurance losses have risen at an annual rate of around 10 percent, reaching \$100 billion by 1999. Losses at this scale threaten the very fabric of our economic system, for an annual increase in the damages bill of 10 percent means that the total bill doubles every seven or eight years. . . . Illustrative of the rising cost of insurance is the situation of homeowners in Florida. With extreme weather events on the increase, they now pay a "deductible" . . . on weather-related insurance claims of around \$100,000. . . . In 2001 Munich Re, the world's largest reinsurance

company . . . estimated that by 2050 the global damage bill from climate change could top \$500 billion. . . . Christopher Walker, managing director for a unit of Swiss Re, told the Wall Street Journal, "Emissions reductions are going to be required." (Flannery, 2006, 235-236)

Jeffrey D. Sachs, director of the Earth Institute at Columbia University and of the U.N. Millennium Project has pointed out that ecological upheavals linked to global warming can contribute to social and economic instability, citing connections between "a temporary decline in rainfall . . . associated" with "a marked rise in the likelihood of violent conflict in the following months" in sub-Saharan Africa. El Niño cycles have impacted rainfall leading to "catastrophic consequences" in Ecuador and Indonesia in 1998, destabilizing the governments in both countries. (Sachs, 2006a) Additional support for Sachs' point, and evidence of increased climate change linked to global warming, is addressed pervasively in Flannery (2005), Kolbert (2006) and many other sources too numerous to mention.

The Response to the Risk of Global Warming of the Public, Business and Government

Despite the strong evidence of anthropogenic global warming, and the immediate risks it poses to society, until recently most of the general public has seemed willing to tolerate a "business as usual" approach to the problem, satisfied to have their children study recycling in school, and to recycle themselves as their busy schedules permit, but reluctant to pay top dollar for a hybrid vehicle, and hoping instead that (as has occurred recently) oil prices will drop even as they have previously risen, ignoring the underlying risk of continued reliance on oil as fuel at any price. Likewise government in the United States may give lip service to tax credits for hybrid vehicles, or solar power and windmills, but put nowhere near as much funding into direct subsidies for alternative energy or co-generation and conservation as it does into more remote and currently unavailable hydrogen fuel-cells (Belloit & Greci, 2006) whose risks are significant (Flannery, 2006, 260-264, 293). And the idea of a carbon tax to encourage more investment in alternative transportation and reduce greenhouse gas emissions is feared by the public, politicians and the fossil fuel industry alike, who still all see their short term economic self-interest as trumping the seemingly

more remote risks of global warming. The energy industry lobbyists still seek to reinforce this bias through disinformation challenging the evidence behind Al Gore's film, even though their television ads and scare stories in *National Review* are demonstrably false. (Krugman, 2006) Katrina caused a bump in these attitudes, but the basic bias towards the status quo in all three sectors remains. But that is now starting to change.

One factor causing this is a reassessment of relative risks facing the American public. Cass Sunstein argues that while climate change and terrorism are "two of the most important sources of catastrophic risk" today, the reason that Americans have supported aggressive action against terrorism rather than climate change is "bounded rationality"—"Americans believe that aggressive steps to reduce the risk of terrorism promise to deliver significant benefits in the near future at acceptable cost. By contrast, they believe that aggressive steps to reduce the risk of climate change will not greatly benefit American citizens in the near future — and they are not willing to pay a great deal to reduce that risk." (Sunstein, 2006) Given the debate over the leaked National Intelligence Estimate that suggests the war in Iraq, at least, has made us less rather than more safe, and that the war on terror is not working out as intended (Sanger, 2006), the odds are that this implicit cost-benefit analysis may shift over time. If climate change makes conditions worse in developing countries with large Islamic populations, an aggressive investment in climate mitigation that improves living conditions might do more to reduce terrorism than the current investment in military hardware and lives.

Some politicians are also taking a strong position in favor of recognizing and responding to the threat of greenhouse gases increasing global warming. Mayor Michael R. Bloomberg of New York City recently gave a speech in which he "urged an end to the political manipulation of science, which he said had been used to discredit the threat of global warming and undermine medical advancements in areas like stem-cell research." Bloomberg was quoted as saying "Despite near-unanimity in the science community, there's now a movement, driven by ideology and short-term economics, to ignore the evidence and discredit the reality of climate change." (Cardwell, 2006)

In Portland, Oregon the city adopted a plan in 1993 to curb greenhouse gases, and has now reduced local emissions to 1990 levels, "while nationally they are up 16 percent," and yet the local

economy is booming. Beginning July 1, 2007, “all diesel sold for vehicles in the city will have to be at least a 5 percent biodiesel blend. (Kristoff, 2006) Burlington, Vermont began a campaign in 2002 called the “10 percent challenge” to “Put the chill on global warming” by reducing municipal greenhouse gas emissions by 10%, with its Mayor Peter Clavelle noting that there is “no silver bullet. There’s no one thing we can do. There’s no ten things we can do. There’s hundreds and hundreds of things that we need to do.” (Kolbert, 2006, 172-176).

And in California, Governor Arnold Schwarzenegger entered into an agreement with British Prime Minister Tony Blair to create a market-based mechanism for reducing greenhouse gases, while cooperating on clean energy and climate change research. “California will not wait for our federal government to take strong action on global warming,” Schwarzenegger stated. (Carlton, 2006) California has since adopted and Governor Schwarzenegger has signed a law imposing a mandatory global warming program that requires a 25% cut in carbon dioxide emissions by 2020, a project the Wall Street Journal scorns for all the usual reasons: The Global Warming Solutions Act of 2006. (California Dreamin’, 2006; Unkovic, 2006) California’s actions may not be sufficient by itself, and risk “industrial interests and free-market advocates” attacking the entire plan, “state by state” efforts to mitigate greenhouse gas emissions will prove insufficient. (Sweet, 2006) But it’s a necessary step if a broad national consensus in favor of concerted action is to be achieved.

Another factor in changing this equation to favor more immediate and significant action has to be a change in the attitude of the one sector of this triumvirate that is most amenable to rational decision making: the business community. Previously, and as we have seen above continues to be true in Texas, the dominant attitude in the business community has been driven by those with an economic interest in preserving the profits they generate through externalities — costs they impose on society and the planet that they don’t pay for themselves. (Gore & Blood, 2006) But that is changing, as the example of the insurance industry previously discussed illustrates. All over the world, and in the United States as well, corporations and insurance companies are waking up to the evidence, and recognizing the costs of doing nothing are rapidly becoming exponentially greater than the costs of taking preventive action. (Guterman, 2006) This is particularly true when you factor in that voluntary action taken on their own terms is likely to be more

effective, and less expensive, than government coerced action built upon regulations in the face of a national emergency twenty years down the road, when conditions are likely to be far worse if no action is taken now. (Fialka, 2006) To give one example of this trend, Weyerhaeuser ran a full page advertisement in the *Wall Street Journal* (June 22, 2006, A11) in which it pledged that by 2020 it “will reduce its greenhouse gas emissions to 40% less than they were in 2000.”

Other examples of business engaging with their former opponents to find collaborative solutions, or seeking market-based solutions to problems raised by greenhouse gases abound. (Deutsch, 2006; Baja, 2006) For example, Richard Branson of Virgin Airlines has pledged \$3 billion in profits over ten years to combat global warming, in response to overtures from Bill Clinton and Al Gore. (Revkin, Timmons, 2006; Green Virgin; Clinton Global Initiative, 2006)

In Europe and elsewhere, this recognition is incorporated into implementing the *Kyoto Protocol on Global Warming*, which entered into force on February 16, 2005 despite American opposition. (Porter, 2006) As a result, European business is at an advantage in participating in the new Clean Development Mechanism (CDM) and American business is locked out of participating in development of this new system for carbon reduction. Perhaps this is another reason why despite Bush Administration opposition to “mandatory approaches for regulation of greenhouse gas (GHG) emissions,” so many state and local regulations are proceeding rapidly to take action. And why many businesses are “under increasing pressure from shareholders and others to adopt climate change-related strategies and commitments.” (Danish, 2006)

The 11th Meeting of the Conference of the Parties to the *United Nations Framework Convention on Climate Change (UNFCCC)* and the 1st Meeting of the Parties to the *Kyoto Protocol* was held in Montreal from November 28 to December 9, 2005, and was successful in shaping the “Montreal Plan of Action” for “both developed and developing country parties to the *Protocol* as well as for non-parties.” Much remains to be done, but at least the institutional framework for further negotiations is in place, and the meeting achieved a “general consensus . . . about the problem of climate change and the need for coordinated action beyond the first commitment period.” (Gray, 2006) The international community is working to address the global warming problem, the evidence is mounting that it is a serious problem that

must be addressed, and the business community in the United States is starting to respond.

CONCLUSIONS

Several authorities believe we may already have passed the point of no return beyond which major changes in our way of life are unavoidable as a result of global warming (Lovelock, 2006), but the degree to which this will be the case depends upon the seriousness with which we take the challenge. As Al Gore noted recently at NYU, “The serious debate over the climate crisis has now moved on to the question of how we can craft emergency solutions in order to avoid this catastrophic damage.” (Gore, 2006b) There are many who believe there is still time to take significant action, whether through creating opportunities for “green” investment strategies like alternative-energy indexes (Keehner, 2006) or by promoting investment in cleaner coal, smarter nuclear power, bioengineered ethanol, or other alternatives. (Talbot, 2006; Special Issue: Energy’s Future Beyond Carbon, 2006)

Marty Hoffert remarks: “The coming battle for a sustainable energy infrastructure will require every bit as much a team effort from government, researchers, and industry” as the Manhattan Project or the Apollo Project did. (Hoffert, 2006) From the standpoint of corporate America, and the interests of the global business community, business has an ethical obligation to respond to this challenge appropriately, by ceasing to fund climate change deniers, and by putting significant corporate investments into reducing greenhouse gas emissions, developing and exploiting alternate energy sources, and investing in and promoting green manufacturing, products and services.

Given the costs to business of inaction in this sphere, which will impact all of their shareholders and stakeholders alike, and the social contract business has with society that permits it to act in the corporate form in order to serve the interests of the community which issues its charter, business must take a leadership role in mitigating climate change now. It is a significant investment opportunity, linking business investment and planning decisions with the latest advances in science and technology — as the World Science Forum being held in November, 2006 in New York City under the theme “The New Universe for Business” and sponsored by Scientific American, the MIT Sloan Management Review, United Technologies and the Wall Street Journal, suggests. And, for once, it is also the right thing to do. (Diana, 2006)

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